REMARKS

The Office Action dated November 2, 2004, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 12-22 are amended to more particularly point out and distinctly claim the subject matter of the invention. New claims 23 and 24 are added. Because the claims are amended to correct informalities and are not in response to a statutory rejection, applicant respectfully submits that the claims are entitled to their full range of equivalents. No new matter is added. Thus, claims 12-24 are pending in the present application, and are respectfully submitted for consideration.

Claims 16-18 were objected to for informalities. Applicant amends the claims to correct the informalities. Thus, the objection is rendered moot.

Claims 12-16 and 19-22 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,574,981 (Ahonen). The Office Action took the position that the cited reference taught all the elements of claims 12-16 and 19-22. Applicant respectfully traverses the anticipation rejection and submits that Ahonen does not disclose or suggest all the features of any of the presently pending claims.

Claim 12 recites a method for testing the radio transceiver in a system where the transmission signal pass band, limited by the transmission branch filter of a duplex filter, and the reception signal pass band, limited by the reception branch filter, are adjacent so that the frequency response curves of the filters partially overlap at the stop band between

the pass bands. The method includes arranging a test loop between the transmission branch and the reception branch. The test loop includes a TX coupling, a band pass filter, and a RX coupling, the test loop having essentially less attenuation on the test frequency than the duplex filter and thus a test signal proceeds via the test loop from the transmitter to the receiver. The method also includes tuning the transmitter's transmission frequency away from the transmission signal pass band to a test frequency that falls into the stop band of the transmission branch filter frequency response curve and the reception branch filter frequency response curve. The method also includes tuning the receiver reception frequency to the test frequency, transmitting the test signal, receiving the test signal which has been attenuated while passing through the test loop.

Claim 13 recites a method for testing the radio transceiver in a system where the transmission signal pass band, limited by the transmission branch filter of a duplex filter, and the reception signal pass band, limited by the reception branch filter, are adjacent so that the frequency response curves of the filters partially overlap at the stop band between the pass bands. The method includes arranging a test loop between the transmission branch and the reception branch. The test loop includes a TX coupling, a switch, and a RX coupling, the test loop having essentially less attenuation on the test frequency than the duplex filter and thus a test signal proceeds via the test loop from the transmitter to the receiver when the switch is been closed by a switch control. The method also includes tuning the transmitter's transmission frequency away from the transmission pass band to a test frequency that falls into the stop band of the transmission branch filter

frequency response curve and the reception branch filter frequency response curve. The method also includes tuning the receiver reception frequency to the test frequency, transmitting the test signal, receiving the test signal which has been attenuated while passing through the test loop.

Claim 14, upon which claim 16 is dependent, recites the patentable features of claim 12, but is drawn to a method for testing a unit including several radio transceivers in a system.

Claim 15 recites the patentable features of claim 13, but is drawn to a method for testing a unit including several radio transceivers in a system.

Claim 19, upon which claims 21 and 22 are dependent, recites a system for testing a radio transceiver. The system includes a transmission branch consisting of a functionally inter-connected transmitter and a duplex filter and a reception branch consisting of a functionally interconnected receiver and the duplex filter, with the duplex filter limiting a transmission signal pass band and a reception signal pass band. The system also includes a test control tuning the transmitter and receiver on a same test frequency as response to control and the transmitter sending a test signal. The system also includes a test loop connected between the transmission branch and reception branch and including a TX coupling, a band pass filter and a RX coupling, the test loop causing an attenuation on the test frequency that is essentially lower than the attenuation caused by the duplex filter, which enables the test signal to proceed along the test loop from the transmitter to the receiver, and an attenuation on the transmission signal pass band and

the reception signal pass band limited by the duplex filter essentially higher than the attenuation caused by the duplex filter, which enables the transmission signal to proceed from the transmitter to the duplex filter and on to an antenna.

Claim 20 recites the patentable features of claim 19.

As discussed in the specification, examples of the present invention enable a test loop between a transmitter and receiver together with a test frequency outside the frequency band allocated for traffic. Examples of the present invention enable the transmission band TX and the reception band RX, limited by the duplex filter, to be sufficiently close to each other to partially overlap in the stop band, thereby finding a transmission frequency for sending a signal that passes through the transmission filter section of the duplex filter and the reception filter section of the duplex filter. Thus, frequency conversion circuitry between the transmitter and the receiver may be reduced or eliminated. The test signal is transmitted at such an output that even if the signal is attenuated by both filters, it will still exceed the sensitivity threshold of the receiver and can be detected. It is respectfully submitted that the cited reference of Ahonen fails to disclose or suggest all the elements of any of the presently pending claims. Therefore, the cited reference fails to provide the critical and unobvious advantages discussed above.

Ahonen relates to method and arrangement for measuring the condition of a receiver antenna. Figure 1 of Ahonen shows a receiver antenna 1 being connected by means of an antenna cable 2 through a bandpass filter 7. A measuring signal source 10 generates a radio frequency measuring signal to be used for the measurement of the

condition of the antenna. The condition of receiver antenna 1 is measured in a time slot allocated for the radio test loop. Referring to Figure 2 of Ahonen, a radio test signal looped from the transmitter part to the receiver antenna line is used as a measuring signal and sent on a radio channel at a frequency used for the normal traffic of the radio system. A radio test unit 112 is connected between antenna lines 25 and 27. Antenna line 25 includes branching element 23 that branches off a portion of a transmission RF signal to an input 122 of radio test unit 112. Radio test unit 112 converts the transmission frequency signal into a reception RF signal. Testing operations are controlled by an operation and maintenance unit 20 of the base station that commands test unit 112 through control line 20A to form a test loop in a predetermined test time slot and informs whether the measuring signal is switched towards the antenna or the receiver. Thus, Ahonen describes, as a first option for measuring the condition of the receiver antenna, a separate measuring source operating at a test frequency, and, as a second option, a test loop converting a transmission frequency into a reception frequency.

Applicants submit that Ahonen does not disclose or suggest all the features of the presently pending claims. For example, applicants submit Ahonen does not disclose or suggest "arranging a test loop between the transmission branch and the reception branch . . . the test loop having essentially less attenuation on the test frequency than the duplex filter and thus a test signal proceeds via the test loop from the transmitter to the receiver" and "tuning the transmitter's transmission frequency away from the transmission signal pass band to a test frequency that falls into the stop band of the transmission branch filter

frequency response curve and the reception branch filter frequency response curve," as recited in claim 12. Claims 13, 14, and 15 recite the patentable features of claim 12. Further, applicants submit Ahonen also does not disclose or suggest "a test loop connected between the transmission branch and reception branch . . . the test loop causing an attenuation on the test frequency that is essentially lower than the attenuation caused by the duplex filter, which enables the test signal to proceed along the test loop from the transmitter to the receiver," as recited in claim 19. Claim 20 recites the patentable features of claim 19. Applicant respectfully submits that Ahonen does not disclose or suggest at least these features of the presently pending claims.

Applicants submit that Ahonen does not disclose or suggest a test loop between the transmitter and receiver together with a test frequency outside the frequency band allocated for traffic. Instead, Ahonen describes a first and second option for measuring the condition of a receiver antenna. Ahonen does not disclose or suggest combining these options to test a radio transceiver with a test loop between a transmitter and a receiver, and a test frequency different from the transmitter frequency and the reception frequency is used. Further, Ahonen describes using a radio test unit to convert a portion of the transmission RF signal into a reception RF signal and to switch this signal to antenna or the receiver. This aspect of Ahonen does not disclose or suggest tuning the transmitter's frequency away from the transmission signal pass band to a test frequency, as recited in the claims. Moreover, Ahonen describes sending the test signal on a radio channel at a frequency used for normal traffic. In contrast, the claims recite a test

frequency that falls into the stop band of the transmission branch filter frequency response curve and the reception branch filter frequency response curve. Thus, for at least reason, applicant respectfully submits that Ahonen does not disclose or suggest all the features of the presently pending claims. Applicant respectfully requests that the anticipation rejection be withdrawn.

Claims 17 and 18 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ahonen in view of U.S. Patent No. 4,949,090 (Tamii et al.). The Office Action took the position that Ahonen taught all the elements of claims 17 and 18 except the sending of the test signal one by one. Tamii was cited as teaching these elements missing from Ahonen. Applicant respectfully traverses the rejection and submits that the cited references, either alone or in combination, do not disclose or suggest all the features of any of the presently pending claims.

Claims 17 and 18 depend directly from claim 14. Claim 14 is summarized above. Applicant submits that claims 17 and 18 recite the patentable features of claim 14, and additional patentable features.

Tamii relates to a test/receive module test system. Tamii describes a phased-array antenna with a dummy antenna element and a dummy transmit/receive module for testing the other transmit/receive modules by transmitting test signals to, or receiving test signals from, the other antenna elements in the array. Test signals are transmitted in a test mode that alternates with normal-mode operation. Referring to Figure 2, in the test-mode operation, dummy module 7 switches transmit amplifier 34 ON and low-noise amplifier

38 is switched OFF. A dummy transmit signal is input via the dummy transmit signal line 7_1 to dummy module 7 and transmitted from dummy antenna element 7_4. Antenna elements 4_1 to 4_n receive the signal radiated from dummy antenna element 7_4. Receive power detector 53 decides whether the receive circuits are operating normally.

Applicant submits that Ahonen and Tamii, either alone or in combination, do not disclose or suggest all the features of claims 17 and 18. Specifically, the cited references, either alone or in combination, do not disclose or suggest "arranging a test loop between the transmission branch and the reception branch . . . the test loop having essentially less attenuation on the test frequency than the duplex filter and thus a test signal proceeds via the test loop from the transmitter to the receiver" and "tuning the transmitter's transmission frequency away from the transmission signal pass band to a test frequency that falls into the stop band of the transmission branch filter frequency response curve and the reception branch filter frequency response curve," as recited in claims 17 and 18. Applicant submits that the cited references do not disclose or suggest at least these features of the presently pending claims.

The Office Action states that the Ahonen does not disclose or suggest all the elements of claims 17 and 18. Applicant also submits that Tamii does not disclose or suggest the patentable features of claims 17 and 18 which are missing from Ahonen. Tamii describes using a dummy module to send a dummy transmit signal that is received and checked by receive power detector 53. Applicant submits the dummy transmit signal of Tamii is not tuned to a test frequency outside the transmission frequency. Further,

Tamii does not disclose or suggest arranging a test loop or a test frequency different from the transmission and reception frequencies. Thus, Tamii does not disclose or suggest a separate test frequency. Instead, Tamii describes using the same frequency for transmission and reception. For at least these reasons, applicant respectfully submits that the cited references, either alone or in combination, do not disclose or suggest all the features of presently pending claims.

Further, claims 17 and 18 depend directly from independent claim 14. If an independent claim is nonobvious, than any claim depending therefrom is nonobvious. (MPEP 2143.03). Because claims 17 and 18 depend from claim 14, applicant submits these claims are nonobvious. Applicant respectfully requests that the obviousness rejection be withdrawn.

Applicant submits that new claims 23 and 24 recite the patentable features discussed above. Thus, new claims 23 and 24 are allowable for at least the reasons given above, and because they recite additional patentable subject matter.

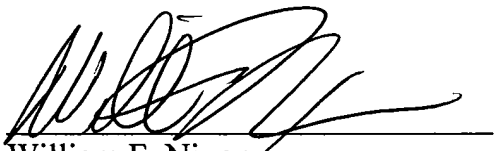
It is submitted that each of claims 12-24 recite subject matter that is neither disclosed nor suggested by the cited references, either alone or in combination. Therefore, it is respectfully requested that all of claims 12-24 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by

telephone, the applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



William F. Nixon
Registration No. 44,262

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802

WFN:noe/cct

Enclosure: Additional Claim Fee Transmittal